Attachment 2A

Briefing for Refinery Pilot Project Working Group

Dissertation:
"Development and Critical Evaluation of Air Pollution Emission Inventories Representing Industrial and Commercial Facilities: A Case Study of Wilmington, California"

November 2, 2005

Objectives of Dissertation

- Evaluate statewide emissions inventory in the Wilmington area for the ability to support:
  - Spatially resolved modeling
  - Assessing uncertainty in certain source categories
  - Quantifying DPM from industrial/commercial facilities

Recommendations for Neighborhood Assessments

- Standardize inventory methods
- Improve communication – ARB & Districts
- Balance inventory specificity with desired model resolution
- Focus local inventories on limited pollutants
- Communicate assessments on relative basis

Chapters in Dissertation

1. Introduction and Background
2. Inventory Development
3. Inventory Summary and Comparisons
4. Refinery Emissions
5. Neighborhood and Mobile Sources at Facilities in Wilmington area

6-8. Case Studies on Uncertainty

9. Policy Implications and Conclusions

Chapter 4 – Refinery Inventories

- 6 facilities evaluated
- Conclusions
- Case Study of Process Heaters
- Recommendations

Refinery Toxic Inventories

- 4 refineries in South Coast
- 2 refineries in Bay Area
- 5 toxics evaluated:
  - Benzene
  - Formaldehyde
  - Chrome +6
  - Hydrogen sulfide *(not in AER, but in AB 2588)*
  - 1,3-butadiene

Conclusions

- BAAQMD and SCAQMD methods different
- Differences in some refineries and some pollutants between AER and Hot Spots (AB2588)
- Should evaluate differences more to understand implications on risk assessment
- Reducing DPM and Chrome+6 will reduce cancer risks

Differences - BAAQMD & SCAQMD

- SCC reporting inconsistent
  - *Emissions may still be fine*
- SCAQMD
  - *Assigns SCC codes for reported criteria and toxic pollutants*
  - *Assigns SCC codes for adopted rules*
  - *NOx and SOx monitored under RECLAIM, most of emissions under CEMS*
  - *Use source tests when available or use of emission factors with appropriate justification*

Differences (Con't)

- Bay Area
  - *Collects activity data from each major piece of equipment and groups of smaller equipment*
  - *Collect specific information on equipment size, age, stacks, controls*
  - *Uses computer program to assign emission factors or use source testing when available*
  - *Upset data collected separately unless reported with throughput*

Differences Between AER and AB2588

- *Not necessarily a problem*
- *Different reporting years, may be different compound lists*
- *AB2588 full updates every 4 years (02/03 last update for refineries)*
- *AER & AB2588 consolidated since 00/01 to improve consistency*
  - *Toxic emissions reported by equipment, by process, same as AER*

Inventory Years

- *Refineries A–D based on 01/02 AER*
- *AB2588 based on approved HRAs in 2000 or 2002*
- *Inventories for those facilities based on 1995 through 1999*
- *2 to 6 years difference in reporting years compared*

Differences Should be Evaluated

- Assumes that refineries should have similar processes
  - *Not necessarily true*
  - *Production methods, types of processes and end products vary widely*
- Assumes that emissions should be more consistent between refineries
  - *Vary by type and age of equipment*
  - *Vary by level of controls*
- *Comparison of rule stringency more appropriate*

Top Emission Sources Vary by Refinery

- Example – benzene
- Sources listed:
  - Fugitives
  - Process heaters
  - Gasoline Engines
  - Floating and Fixed Roof Tanks
- *Not surprising as refinery processes and equipment vary substantially*

Reducing DPM and Chrome +6 Will Reduce Cancer Risks

- *Agree that diesel contributes significantly to risk*
  - *On-site mobile not including in AB2588*
- *Chrome+6 is a combustion by-product*
  - *A major risk contributor*
  - *Based on source tests for South Coast refineries*

Case Study – Process Heaters

- Large variation in toxics noted, not known if due to a few gross polluters or use of default factors
- *Bay Area BARCT not as stringent – attainment area*
- *Variation expected by size and age of equipment, levels of controls*

Case Study (Con't)

- *RECLAIM 2004 NOx analysis of 75 units > 110 mm BTU*
  - *20 units: uncontrolled (82.5 ppm)*
  - *31 units: low NOx burners (25 ppm)*
  - *24 units: SCR (5ppm) BACT*

Recommendations from Chapter 4

- Evaluate requiring controls on large process heaters
- Standardize reporting methods state wide

Controls on Process Heaters

- *RECLAIM allocations based on SCR*
  - *Flexibility of program allows choices to meet declining balances*
- *Not necessarily a major toxic source for most refineries*
- *Risk depends on where and how emissions are released, not just amount*

Standardize Reporting State Wide

- *Local districts have flexibility to collect emission data*
- *Use best data possible, including CEMS, source tests*
- *Allow use of emission factors with adequate substantiation*
- *Use CEIDARS, which provides a standard format*
- *New format would be extremely expensive to implement*
  - *~3,000 AER customers each year*
  - *Many years to develop computer program, forms, guidance, etc*

Chapter 9 – Discussion of Relevant Recommendations

- Add on-site mobile to AB2588
  - *ARB would need to change guidance*
- More consistency between districts
  - *Use CEIDARS, ARB standard format*
  - *EITAC for statewide coordination*
  - *Share information*

Chapter 9 Discussion (Con't)

- Reduce year to year variability
  - *May be due to activity changes or better information*
  - *Always strive to improve*
- Standard default data set for release parameters for every source
  - *ARB could develop, but extensive effort*
  - *Depend on significant assumptions*

Chapter 9 (Con't)

- Build reporting programs for on-site on- and off-road diesel sources
  - *ARB would need to change guidance*
  - *Need to avoid double counting elsewhere in inventory*

Overall Summary

- Dissertation raised some good points
- Inventory is always a 'snapshot' of a moving target
- Always seek to improve inventory and risk assessment
  - Rule development
  - Compliance verification